Presented By:
Edwin Tirona, CEO

2649 Production Road
Virginia Beach, VA 23454
Phone: 757.431.5000
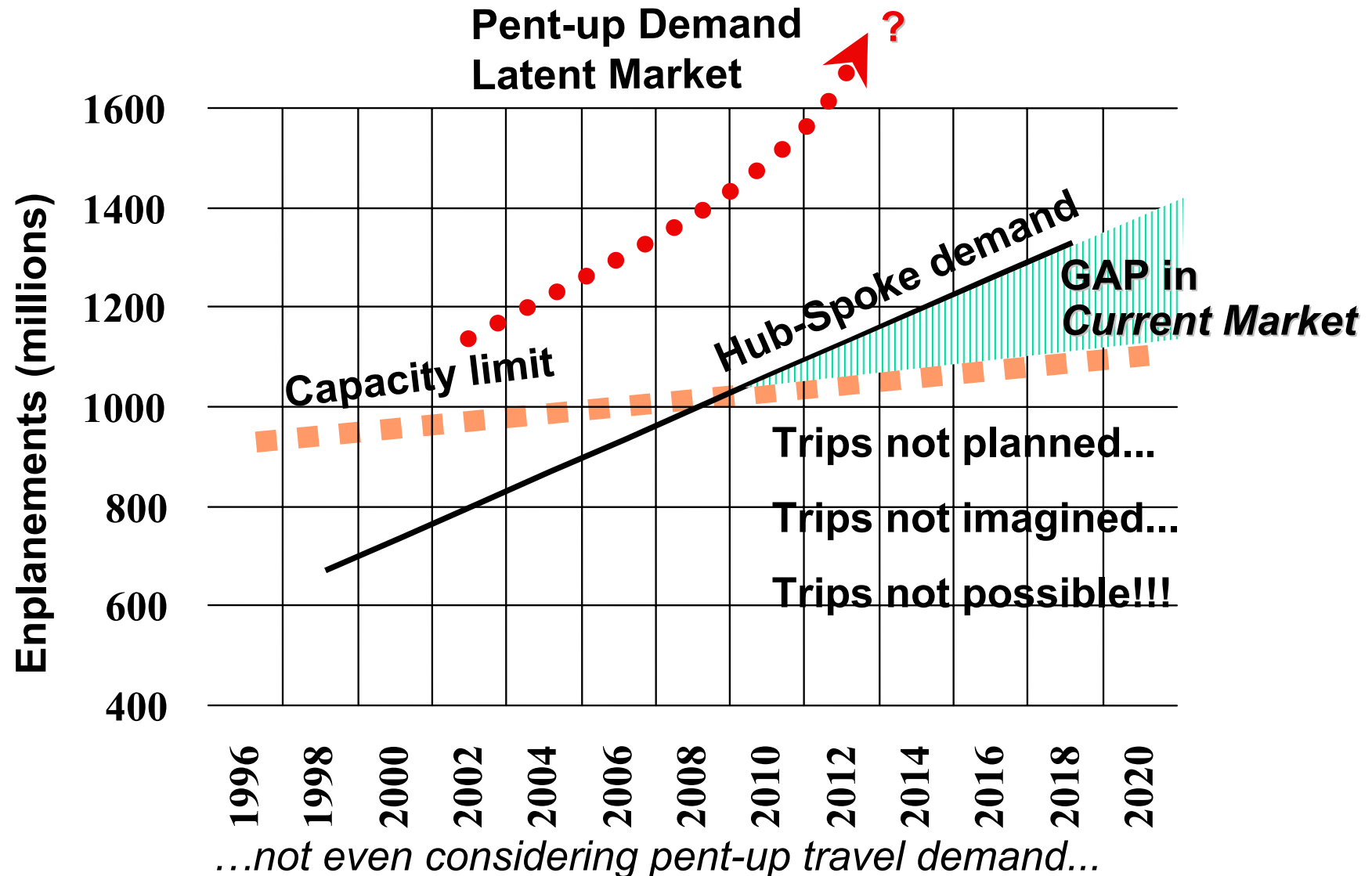*Fax: 757.431.0834*

Company Background

- Founded in 1988

- Offices in Virginia Beach and Richmond, Virginia

- 80 employees with annual sales of $10 million

- MiraDyne division founded in 2000

- Received $670,000 in funding from NASA SBIR to develop SATS-Net

- Received $670,000 in funding from NASA SBIR to develop GAAINS

- Small Aircraft Transportation System (SATS) Program is a five-year proof of concept research and technology development phase funded by US Congress to last until 2005 with a budget of $69 million dollar.

- Partnership among NASA, FAA, US aviation industry, state and local aviation official and Universities to relieve the nation's current problems of highway gridlock and airport delays.

- The National Coalition for Aviation Mobility, NCAM, a non-profit organization is tasked with the coordination and integration of technical work and products of the SATS Program.

The Travel Problem?

Pent-up Demand
Latent Market

?

Enplanements (millions)

1600
1400
1200
1000
800
600
400

Capacity limit

Hub-Spoke demand

GAP in
Current Market

Trips not planned...

Trips not imagined...

Trips not possible!!!

1996 1998 2000 2002 2004 2006 2008 2010 2012 2014 2016 2018 2020

...not even considering pent-up travel demand...

Source: NASA SATS Program

Small Aircraft Transportation System

The SATS Program is a series of flight experiments leading to integrated flight demonstrations in FY2004-5 delivering:

– Flight validation of enabling airborne technologies
  - Revolutionary Integrated Flight Deck
  - Automated Flight path Management
  - Experimental Data Relevant to Certification

– Technology Infusion/Transfer
  - Vested industry partners ready to implement
  - Accelerated technology commercialization

– System Impact Analysis
  - System cost/performance
  - Environmental/economic impact

(R)evolutions in Higher Speed Travel

What is Next? More Speed to More Destinations
The "Atomic Structure" of Business Innovation Cycles
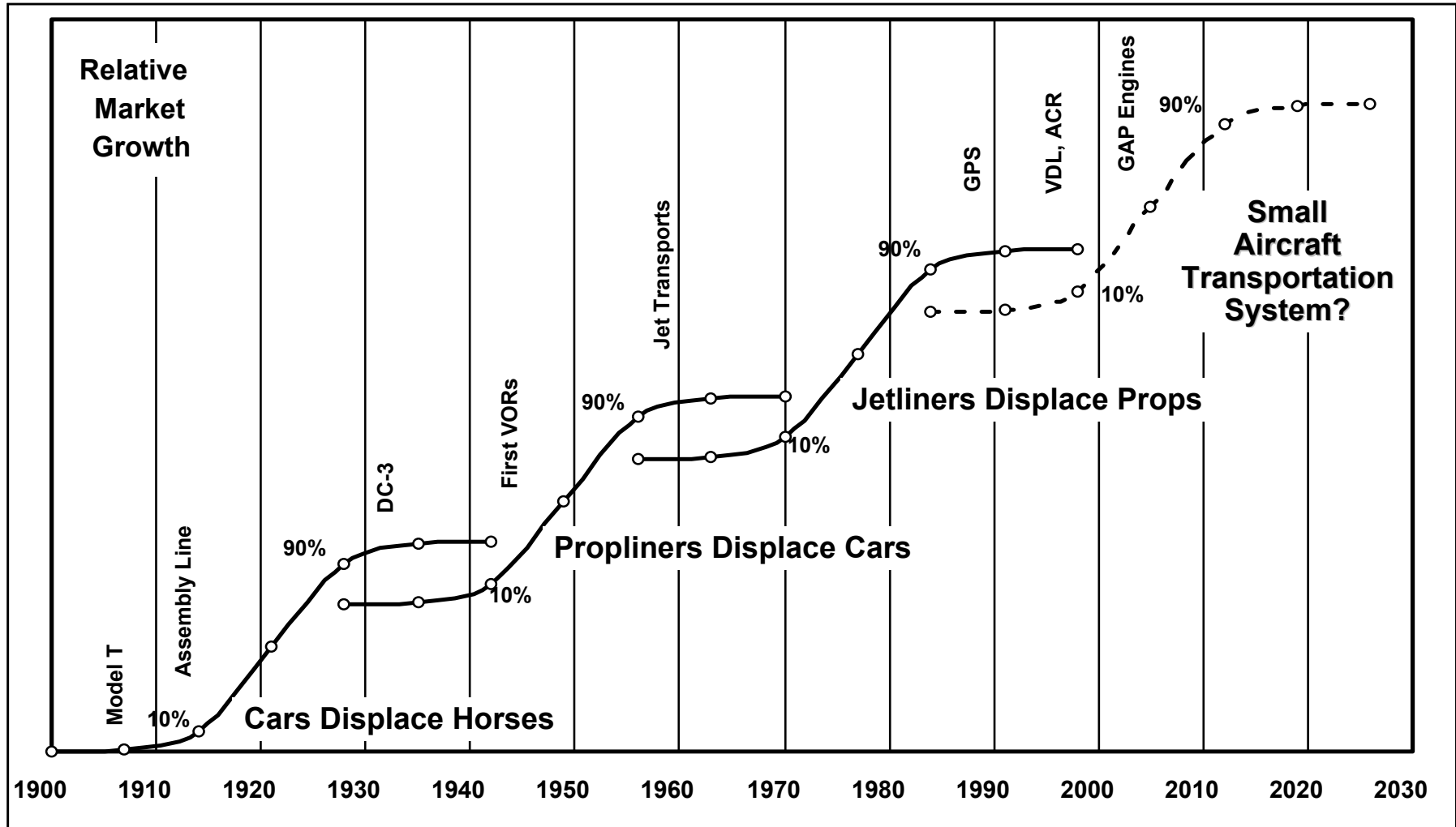
Source: NASA SATS Program

Typical Business Trip - GA vs. Airline

GA Trip Segment   Time (min.)

Plan Flight (30 min.)
check weather and NOTAMs with the FAA, and file your flight plan with ATC.

Drive to Airport (15min.)
from home to the local community airport (Mansfield, MA).

Load Baggage (5 min.)
into the airplane.

Preflight Airplane (15 min.)
and fuel the airplane.

Taxi to Runway (5 min.)
and perform an engine & systems run-up.

Fly to Frederick, MD (130 min.)
non-stop from Mansfield, MA to Frederick, MD using a route that goes around NYC and over Allentown, PA. Your airplane is a Beechcraft Bonanza that has an average cruise speed of 180 mph.

Taxi to Park (10 min.)
your airplane in a visitors tiedown spot on the GA ramp.

Check In, Call Cab (5 min.)
Check in with the FBO, close your flight plan, and order a taxi.

Take Cab to Meeting (20 min.)
Wait for the taxi, then ride into downtown Frederick.

Travel Time to Meeting: 235 min.

Travel Time Round Trip (Door-to-Door) **7.8 hours**

Surface Travel / Fly / Surface Travel / Meeting / Surface Travel / Fly / Surface Travel

Timeline for a 1-day business trip between Mansfield, MA, located 1-hr. outside of Boston and Frederick, MD, located 1-hr outside Washington, D.C. Timeline assumes a 2-hr. meeting in downtown Frederick.

GA – 7.8 Hours

Airline – 16 Hours

Source: AOPA

Airline Trip Segment   Time (min.)

Drive to Airport (60 min.)
from the outlying suburbs into a big city with typical morning rush hour traffic.

Park Your Car (15min.)
in parking place that may end up being in a satellite parking garage due to over crowding.

Walk (10 min.)
to check in counter.

Clear Security (90 min.)
by presenting yourself and your bags for a thorough preboarding security inspection and 90-minutes before your scheduled flight.

Wait to Board (15 min.)
before being allowed onto the airplane.

Wait for Push Back (15 min.)
in your assigned seat for boarding to be completed before your airliner actually pushes

Taxi to Runway (10 min.)
two miles to the other side of the airport,

Wait to Takeoff (15 min.)
while the 14 airliners in front of yours work their way through the queue

Fly to D.C. (90 min.)
at 500 mph. On a flight from Boston to Washington, D.C., your actual flying time without weather delays would be about one and a half hours.

Taxi to Gate (10 min.)
after landing and wait for your designated gate to open.

Wait for Jetway (5 min.)
while they get the Jetway in place and open the door.

Deplane (5 min.)
and wait for the for the people in front of you

Claim Baggage (20 min.)
at baggage claim and wait for your bags to arrive

Wait for Rental Car Bus (15 min.)
Walk to the rental car shuttle bus pickup location and wait for the bus

Ride Rental Car Bus (15 min.)
to the outlying rental car lot

Get Rental Car (30 min.)
and wait in line to receive your rental car agreement and map, walk to the car, load it up

Drive to Meeting (60 min.)
Make your way through the streets and highways of a city you've never been to before with only moderate levels of late morning traffic.

Travel Time to Meeting: 483 min.

Travel Time Round Trip (Door-to-Door) **16 hours**

Surface Travel / Fly / Surface Travel / Meeting / Surface Travel / Fly / Surface Travel

General Aviation Market Overview

Total Pilot Certificated   **649,957**

Hours Flown Annually   **31 million**

Number of Public Use Airports   **5,041**

Fuel Consumed Annually   **1 billion, 382 million**

Total General Aviation Aircraft   **214,388**

Source: FAA 2000 & 2001 Data

What is SATS-Net?

SATS-Net

An On Demand Travel Solution

- Runways
- Frequencies
- Approach Plates
- Primary Airport Info
- Airport Info At Glance
- Airport Services
- NAVAIDS
- Web Appliances
- Flight Service Station

- Hotel Reservations
- Car Reservations
- Airline Reservations
- Area Information
- Restaurants
- Local Transportation
- Aircraft Sales
- Airport Management Tool
- Weather
- Trip/Flight Planning Tool

Our vision is to equip each GA airport with an interactive SATS-Net kiosk thus providing a secure portal to our operations center to access FAA and travel information

Solving the Travel Problem
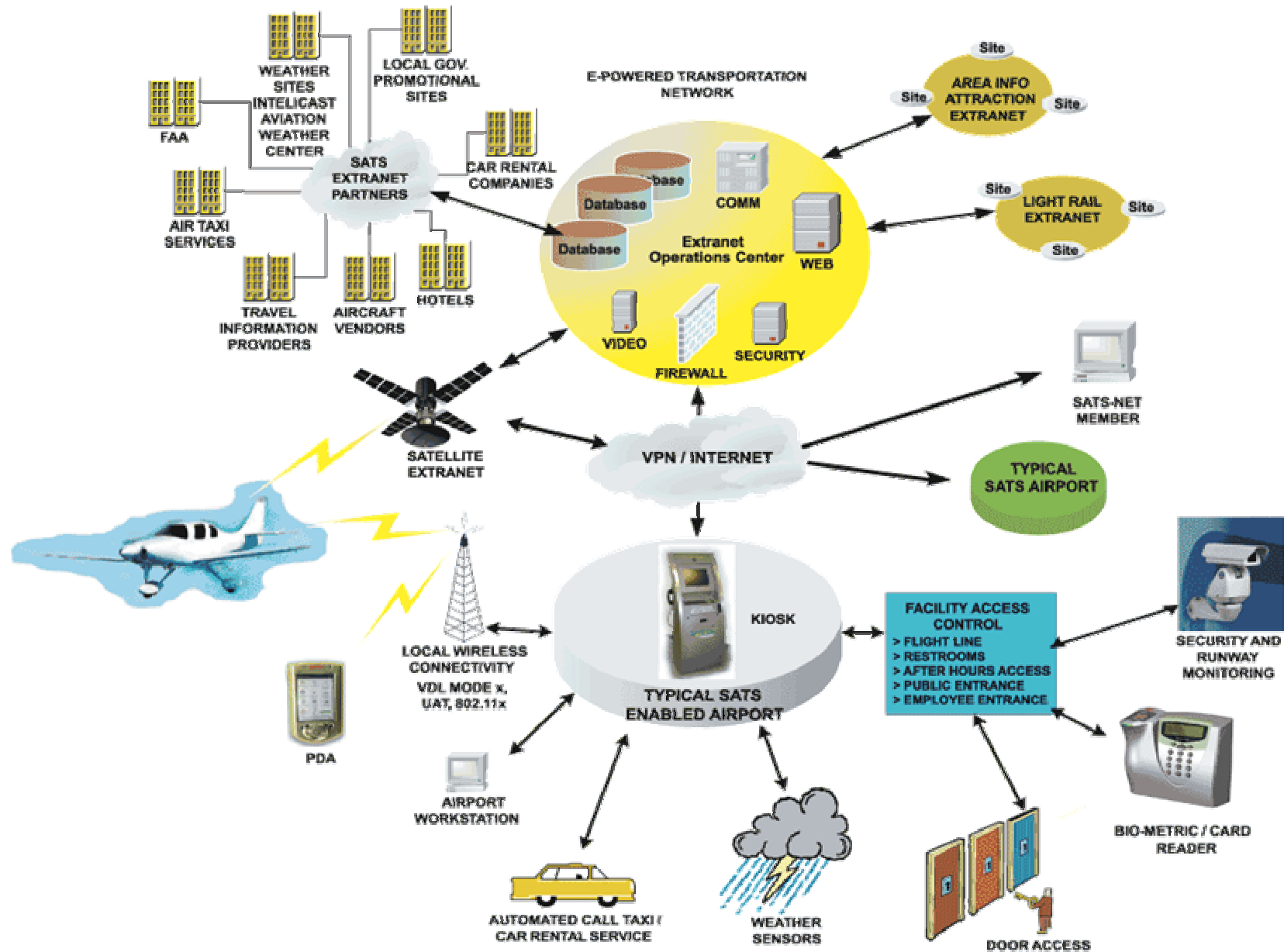
Airport Info At A Glance Page

Airport Name

SATS-Net HOME   AIRPORT SEARCH   CONTACT US   AIRPORT ADMIN   FBO   DSI ADMIN

Welcome LANG

LOG-OFF

MEMBERSHIP INFO

BALTIMORE-WASHINGTON INTL (BWI)

Printer Friendly

Airport Images

Photo Not Available

Approach Plate
Airport Photo

Runways
04/22   6000 X 150 ASPH-F
10/28   10502 X 200 ASPH-F
15L/33R 5000 X 100 ASPH-F
15R/33L 9501 X 150 ASPH-F
H1   100 X 100 ASPH-G

FAA Fuel Type
100LLA

Frequencies
CTAF:
UNICOM: 122.950
Tower: 119.4
Hours: 24
ATIS: 127.8
              115.1
Hours: 24
Clearance Del: 118.05
Ground: 317.425
Approach: 317.425(101-130)
              128.7(181-019)
              119.0(020-100)
              307.9(181-019)
              124.55(101-130)
              282.275(020-100)
              290.475(131-180)
              119.7(131-180)
              125.3
              291.625
Departure: 128.7
              124.55

Contact
Manager:
STEPHEN D. SHEEHAN
PO BOX 8766
BWI AIRPORT, MD 21240-0766
410-859-7018

Publicly Owned
STATE OF MD
PO BOX 8766
BWI AIRPORT, MD 21240
410-859-7100

Closest Lodging   **Distance**
Marriott Balt-Wash Arpt   0.7
Comfort Suites Linthicum Height   1.6
Rri Washington Dc Bwi Airport   1.7
                                       More...

Attraction Name   **Distance**
Friendship Park   1.2
Baltimore-Washington International Commerce Park   1.4
Andover Park   1.4

Closest Restaurants   **Distance**
Burger King   1.2
Domino's Pizza   1.3
Subway Sandwiches & Salads   1.3
                                       More...

Weather
Baltimore, MD
Today's Forecast   WX.com
HI: 71 °F / 22 °C
LO: 46 °F / 8 °C
Monday May 19, 2003
Temp   : 68 °F / 20 °C
Humidity : 53%
Barometer : 30.32
Wind   : 8 from the E

To provide information about this airport's fuel prices, attractions, restaurants or a comment, please fill out the **User Input Form**

AIRPORT NEWS
LODGING
RESTAURANTS
TRANSPORTATION
AREA INFO
AIRCRAFT SALES
FLIGHT SHARE

RUNWAY INFORMATION   FREQUENCIES   WEATHER   APPROACH PLATES   SATS-Net FORUM

AIRPORT INFO AT GLANCE   PRIMARY AIRPORT INFO   AIRPORT SERVICES   Site Map   Terms of Use

Pilot Info   Traveler Info

Approach Plates Page

Select Approach
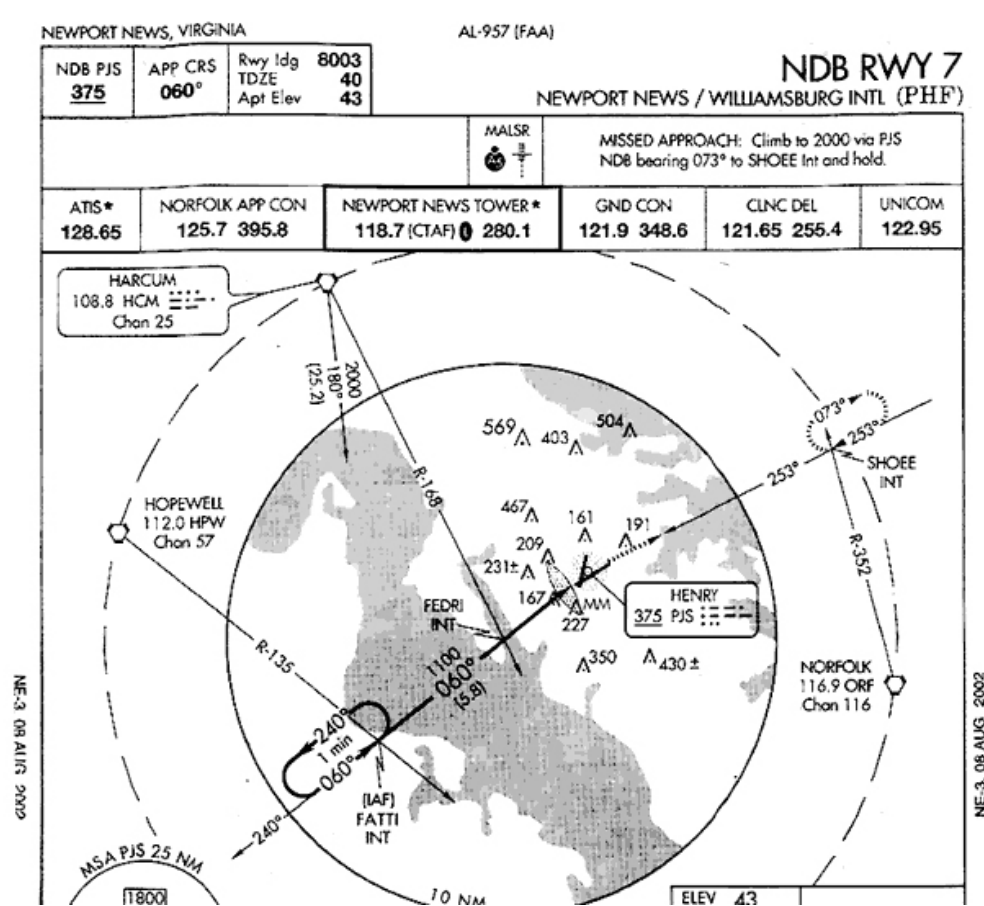
**FAA Data

Lodging Page

Welcome LANG

LOG-OFF

MEMBERSHIP INFO

BALTIMORE-WASHINGTON INTL (BWI)

QUESTIONS

Stars Meaning
Reservation
Confirmation
Cancellation
Miscellaneous
View/Cancel
Reservation

Hotel Name	City	Distance (Miles)
MARRIOTT BALT–WASH ARPT	BALTIMORE	0.7
COMFORT SUITES LINTHICUM HEIGHT	LINTHICUM HEIGH	1.6
RRI WASHINGTON DC BWI AIRPORT	LINTHICUM HEIGH	1.7
HX BALTIMORE WASH INTL ARPT	LINTHICUM	1.7
FAIRFIELD INN	LINTHICUM	1.8
MICROTEL INN AND SUITES	LINTHICUM	2
HOMEWOOD SUITES BWI INTL ARPRT	LINTHICUM	2

Search Lodging

Search for hotels and make your reservation online.

Supplier Type

○ HRN/Net Rate   ○ GDS/Sabre System   ◉ Both

Please enter a destination:

City:

State:
--Choose--

Choose your dates:

Check In:
May 19 2003

Check Out:
May 26 2003

Adults:

AIRPORT NEWS

LODGING

RESTAURANTS

TRANSPORTATION

AREA INFO

AIRCRAFT SALES

FLIGHT SHARE

RUNWAY INFORMATION   FREQUENCIES   WEATHER   APPROACH PLATES   SATS-Net FORUM

AIRPORT INFO AT GLANCE   PRIMARY AIRPORT INFO   AIRPORT SERVICES   Site Map   Terms of Use

**Travel Now Data

Restaurant Page

Closest Restaurants

| SATS-Net HOME | AIRPORT SEARCH | CONTACT US | AIRPORT ADMIN | FBO | DSI ADMIN |

Welcome LANG

LOG-OFF

MEMBERSHIP INFO

BALTIMORE-WASHINGTON INTL (BWI)

Restaurant Name	Cuisine	Address	Contact No.	Distance
Burger King	Hamburgers, Fast Food	7500 Connelley Dr # A, Hanover, MD	(410)760-6383	1.2
Domino's Pizza	Pizza	7502 Connelley Dr # 112, Hanover, MD	(410)553-0030	1.3
Subway Sandwiches & Salads	Sandwiches, Salads, Fast Food	7502 Connelley Dr # 116, Hanover, MD	(410)768-2274	1.3
McDonald's	Hamburgers, Fast Food, Chicken, Sandwiches	778 Elkridge Landing Rd, Linthicum Heights, MD	(410)859-8983	1.5
Domino's Pizza	Pizza	857 Elkridge Landing Rd # 500, Linthicum Heights, MD	(410)859-3030	1.8

AIRPORT NEWS

LODGING

RESTAURANTS

TRANSPORTATION

AREA INFO

AIRCRAFT SALES

FLIGHT SHARE

Restaurants Search

Search for restaurants anywhere in the country. To add restaurant data to the site, <u>click here</u>

▶ Required Field

City or Zip: ▶   **State:**

`Virginia Beach`   `--Choose--` ▼

Cuisine: **Restaurant Name:**

`--Choose--` ▼   `_____`   [Search]

OR Search for restaurants near an airport.

Airport ID: **Airport Name:**

`_____`   `_____`   [Search]

| RUNWAY INFORMATION | FREQUENCIES | WEATHER | APPROACH PLATES | SATS-Net FORUM |
| AIRPORT INFO AT GLANCE | PRIMARY AIRPORT INFO | AIRPORT SERVICES | Site Map | Terms of Use |

Restaurant Row Data   **Restaurant Search

Call A Taxi Page

Transportation Page

**Travel Now Data

Airline Flight Info

Area Info Page

SATS-Net

SATS-Net HOME   AIRPORT SEARCH   CONTACT US

Welcome to SATS-Net

NEWPORT NEWS/WILLIAMSBURG INTERNATIONAL

LOG-IN

MEMBERSHIP INFO

Attraction Name	Distance
Moore House	6.2
Rhine River	10.5
Casemate Museum	13.4
Lake Corbin	4.4
Glass House	17.3
National Center of State Courts	14.4
College Of William And Mary	15.4
Williamsburg Theatre	15.2
Warren House	18.2
Newport News Middle Ground Lighthouse	14.1
Fort Wool	14.6
Fort Magruder	13.2
Abby Aldrich Rockefeller Folk Art Collection	14.8
Hermitage Foundation Museum	18.3
Old Dominion University	19.7
Historic Trades Branch Colonial Williamsburg Found	14.8
The Capitol	14.7
Carters Grove Historical Home	8.9
Victory Center	7.4
Warwick-Denbigh Shopping Center	2.5
Victoria Boulevard Historic District	11.1
Thimble Shoal Lighthouse	16.2
Tue Marshes Lighthouse	9.3

AIRPORT NEWS

LODGING

RESTAURANTS

CALL A TAXI

TRANSPORTATION

AREA INFO

AIRCRAFT SALES

RIDE SHARE

RUNWAY INFORMATION   FREQUENCIES   WEATHER   APPROACH PLATES   SATS-Net FORUM

AIRPORT INFO AT GLANCE   PRIMARY AIRPORT INFO   AIRPORT SERVICES   Terms of Use

**Airport Guide / State Tourism Data

Aircraft Sales Page

**FAA / Airport Guide Data

Value of SATS-Net to the Community

Airport = Interstate Off Ramp

- **Personal Choice Destination for Transients, Visitors and Residents:**

  Increased

  Fuel Sales

  Food Sales

  Retail Sales

  Lodging

  Tourism

  Car Rental

Create: Expanded tax base, jobs and quality of life

Deployed first SATS-Net Kiosk at Danville Virginia Regional Airport in partnership with local and state aviation authorities.

Danville After Hours Access

https://www.sats-net.com/security

PUBLIC ACCESS MANAGEMENT
Display and manage current public access

REAL TIME EVENT LOG
View real-time event activity

CARD ACCESS MANAGEMENT
Assign cards and manage local and national access rights

SATS-Net's Internet-Enabled Access Control System utilizes the power of the Internet and Virtual Private Networking technology to provide SATS airports with a national card access system. Individual SATS airports can view and manage their security access rights for local airport staff and SATS-Net members. When the airports change the after-hours and public rights the information is automatically sent to SATS-Net's national database and posted on the airport's news page at www.sats-net.com to provide real-time facility access infomation to all travelers. Because the access control system uses a centralized national database, valuable event information can be accessed, monitored and controlled in real-time.

MAIN PAGE

EVENT LOG

Card #	User Name	Time of Event	Event
0010		16:55:29 12/11/02	Local Account DOOR ALREADY UNLOCKED, Door 2
00001F5	Lang Nguyen	16:35:45 12/11/02	SATS-Net Account ACCEPTED, Door 2
0002	John	16:02:10 12/11/02	Local Account ACCEPTED, Door 2

PUBLIC ACCESS

Public Access Status	Public Group Name	Days	Access Hours	Lock/Unlock
DOORS UNLOCKED - NO CARD REQUIRED	PUBLIC WORKWEEK	M T W T F	09:00:00 - 17:00:00	LOCK NOW

CARD / USER MANAGEMENT

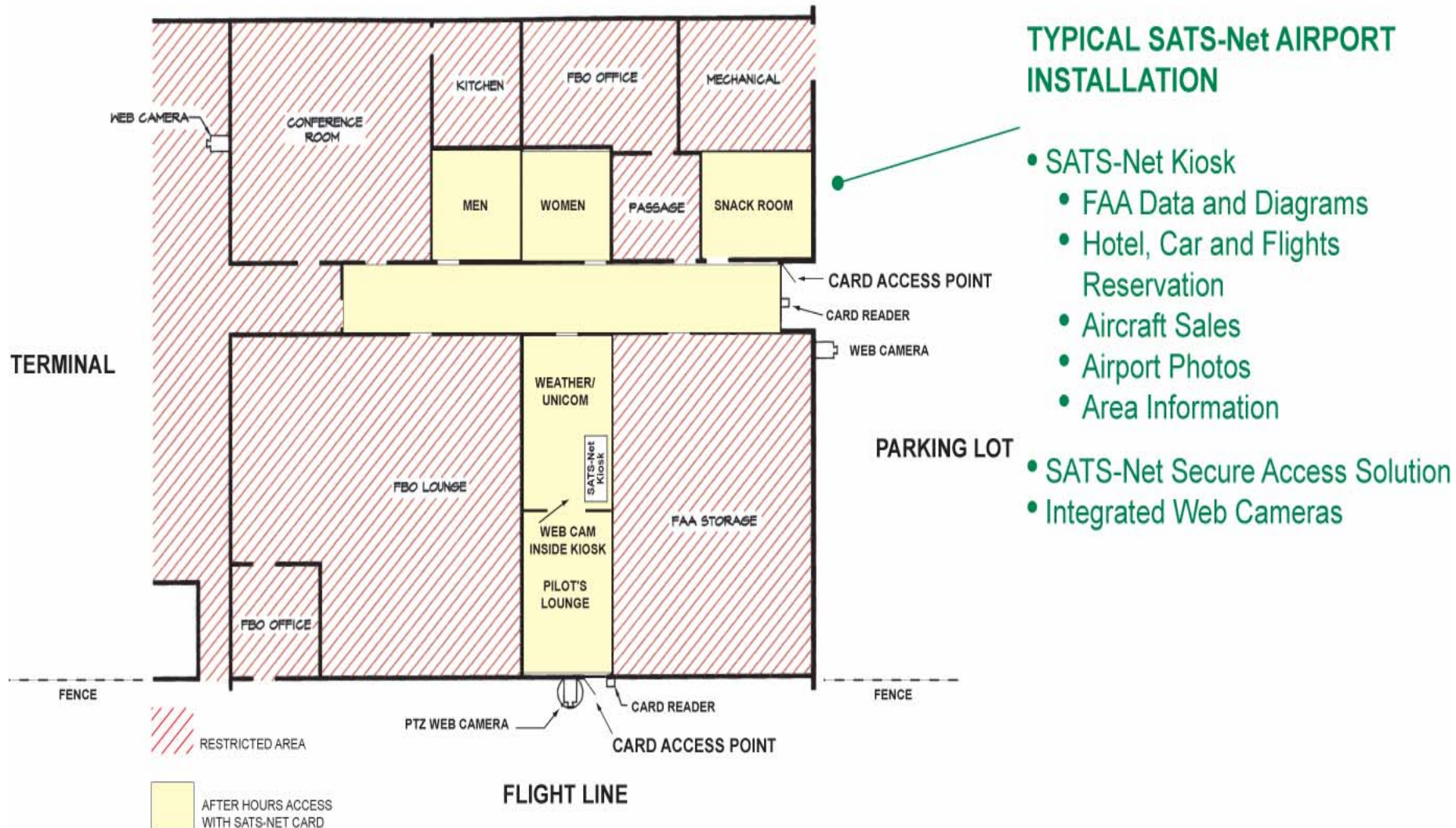| Card #	User Name	Position	Enable	Disable	Workweek	Extended Workweek	7-Day Workweek	7-Day Extended Workweek	Weekend	Extended Weekend	Unlimited	Unlimited #2
SAT 1	SATS-Net MEMBERS	n/a	X									X
0002	John Smith	manager		X	X							

ADMIN	PUBLIC ACCESS	CARD GROUPS	HISTORY

SECURE WEB ACCESS
Admin log-in page

TYPICAL SATS-Net AIRPORT INSTALLATION

- SATS-Net Kiosk
  - FAA Data and Diagrams
  - Hotel, Car and Flights Reservation
  - Aircraft Sales
  - Airport Photos
  - Area Information

- SATS-Net Secure Access Solution
- Integrated Web Cameras

GROUP MANAGEMENT
Manage local and national access times

ADMIN PAGE
System management

EVENT LOG
View last 100 events

Danville After Hours Access

TERMINAL

CONFERENCE ROOM
KITCHEN
FBO OFFICE
MECHANICAL
MEN
WOMEN
PASSAGE
SNACK ROOM
WEB CAMERA
MEN
WOMEN
SNACK ROOM
WEATHER/UNICOM
CARD ACCESS POINT
CARD READER
WEB CAM INSIDE KIOSK
SATS-Net Kiosk
PILOT'S LOUNGE
FAA STORAGE
PARKING LOT
FBO OFFICE
WEB CAM INSIDE KIOSK
PILOT'S LOUNGE
PTZ WEB C
CARD ACCESS READER
FENCE
FENCE

RESTRICTED AREA

AFTER HOURS ACCESS WITH SATS-NET CARD

SATS-Net Web Appliance Live Video Capture of Danville Event

SATS-Net Potential Revenue

Membership Revenue:
>Individual
>Airport

Travel Services Commissions:
>Auto Rentals
>Commercial Flight Bookings
>Hotel Reservations

E-Commerce:
>Airplane for Sale Ads
>Pilot Supplies (GPS, Headsets)

Value Add Services:
>Kiosk Sales
>Web Appliance Sales (Door Access & Web Cameras)

Co-operative Revenue:
>Corporate Advertising on SATS-Net Website
>Partnerships with NASA, SATS Labs & State Aviation Departments

SATS-Net Milestones

- Created an airport information database of 5000+ airports
- Integrated Travel Now's hotel, car, and flight, reservation system into the SATS-Net database
- Tested an automated Call Taxi service using web based Interactive Voice Response (IVR) technology
- Created Aircraft For Sale listing module
- Integrated Restaurant Row's restaurant/menu database into the SATS-Net database
- Developed automated parsing routines to directly import FAA data into the SATS-Net database
- Developed and tested a secure, centralized database-driven, door/airport access solution for Danville Airport
- Negotiated use of tourism data from the state of Wisconsin and Virginia
- Grand opening of the first Virginia SATS airport at Danville Regional Airport on December 17, 2002
- Currently have over 400 members

SATS-Net Future Goals

- Re-brand SATS-Net.com to AirTraveler

- Acquire use of tourism data from other states

- Automated car rental system

- Trip/flight planning tool

- Establish corporate sponsors

- Integrate Microsoft's Map Point software

- Integrate automated fuel services

- Implement WAP and PDA capabilities

- Enhance site features to include: User Preferences, Increase Database Content, International Pilot Information

- GAAINS/Automotive Telematics

- Integrate Enhanced Pilot Information Center (EPIC)

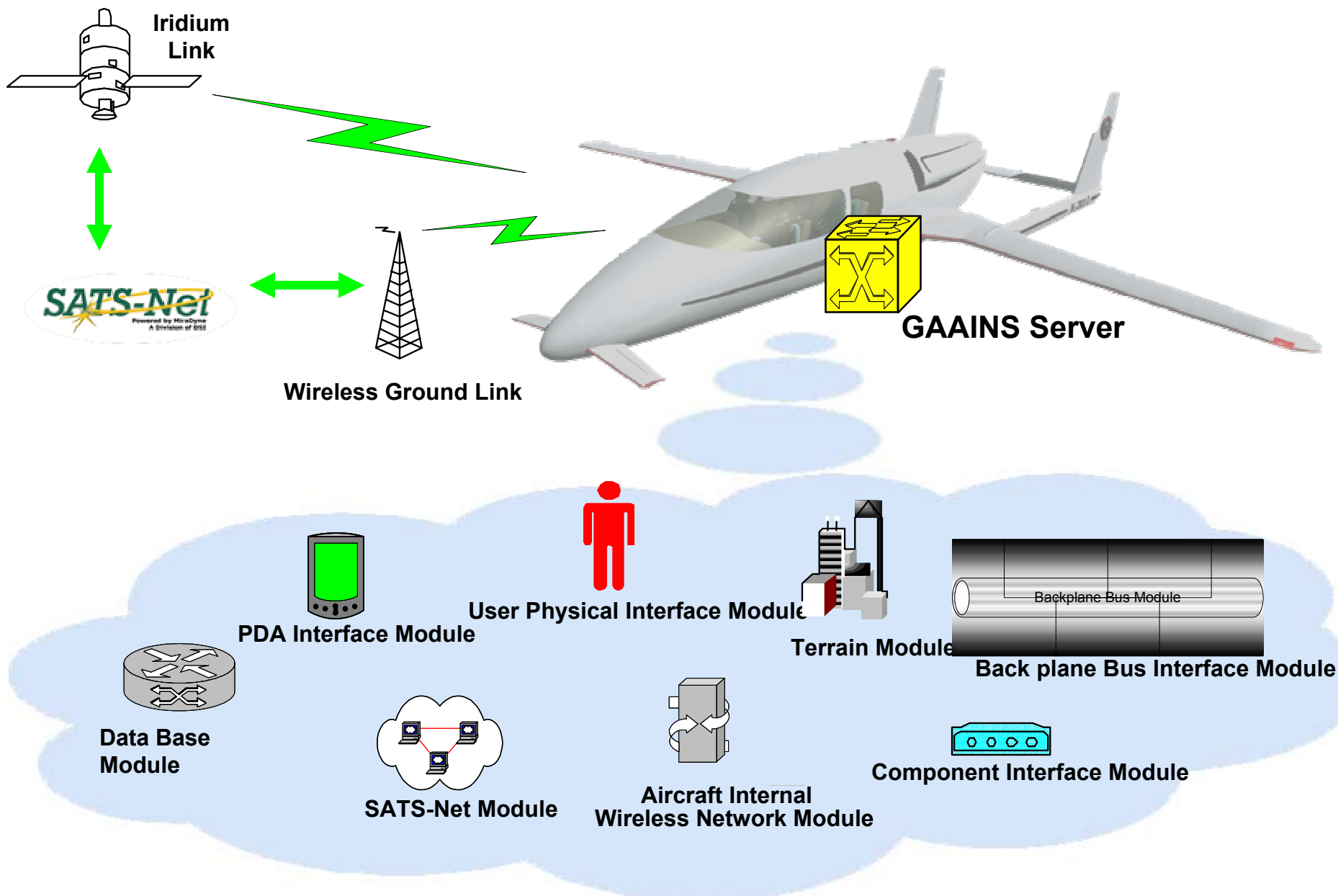**General Aviation Aircraft Information Network Server**

The GAAINS Innovation

- Provide core In-Cabin intelligence and processing power needed to drive informational and eventually mission critical applications (Highway in the Sky, Airborne Internet) required to meet the four SATS objectives

- Clustered small form factor server utilizing flash based storage

- Robust high-speed satellite data link module

- Integrated backplane bus architecture

- Standardized interface protocol for the AGATE/SATS glass cockpit

General Aviation Aircraft Information Network Server

Iridium Link

SATS-Net

Wireless Ground Link

GAAINS Server

PDA Interface Module

User Physical Interface Module

Terrain Module

Backplane Bus Module

Back plane Bus Interface Module

Data Base Module

SATS-Net Module

Aircraft Internal Wireless Network Module

Component Interface Module

GAAINS Phase I Milestones

- Operating System & Programming Language Selected
  - Standardized on Microsoft .NET Framework
  - Standardized on Microsoft CE Operating System
- PC 104 Hardware Standard Adopted
- COTS Iridium Satellite Modem Flight Tested
- CANBus Data Bus Incorporated
- Wi-Fi Standard 802.11 Selected
- Universal Data Bus Platform via Multi-Threaded Peripheral Device Control Identified
- Flight tested GAAINS

GAAINS Hardware

- Solid State Memory

- Redundant Processors

- Ruggedized

- Small Form Factor

- COTS Sensors and Devices

- CANBus w/PC104 Form Factor

GAAINS Universal Data Bus Gateway

- CANBus chosen for: PC 104 form Factor, COTS Components, High Speed, Real Time Operation and Ruggedness

- GAAINS must also be adaptable with other Data Bus Technologies for future applications
  - Telematics
  - Video

Universal Data Bus Gateway

Basic GAAINS Telematics System
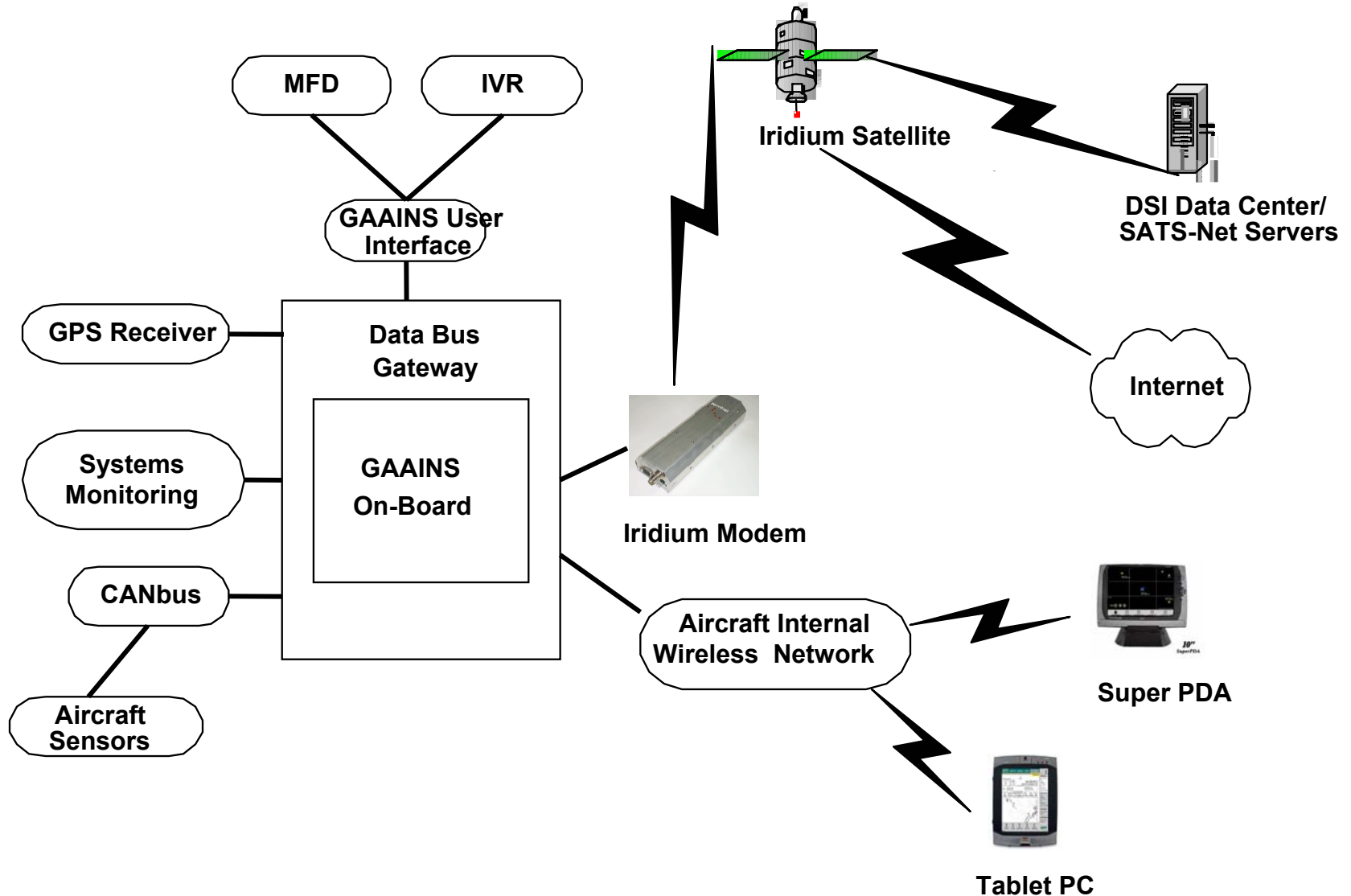
GAAINS - A Geography Based Tool For The SATS Traveler

Real Time On-Demand Travel Information thru Aircraft Intranet and SATS-Net

- E-Mail / Web Access

- Lodgings

- Restaurants

- Airport Facilities

- In-Flight Information

- In-Flight Entertainment

GAAINS In-Flight Test Setup and Photos

GAAINS In-Flight Test Setup
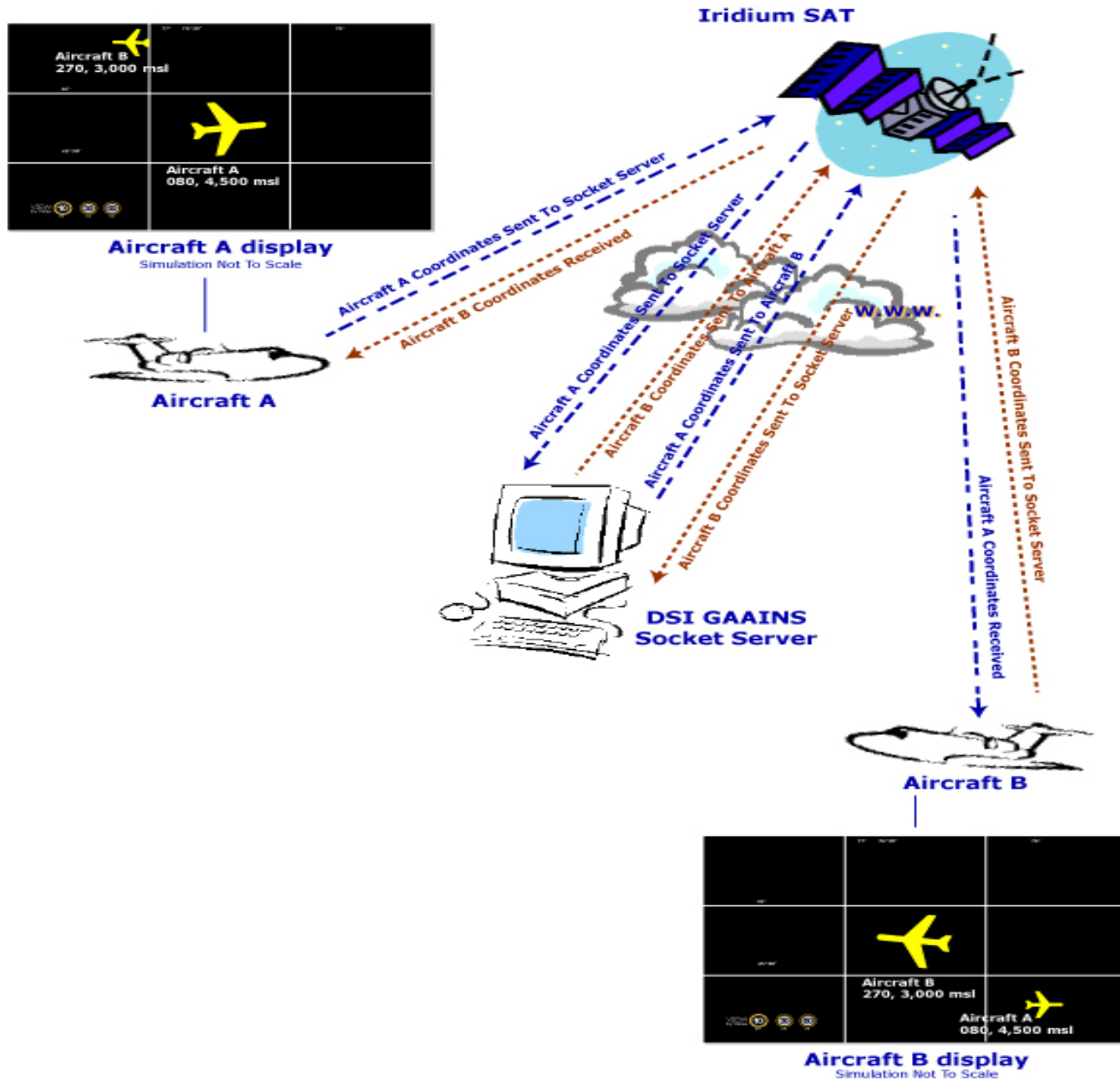
In-Flight Test Photos

SATS-Net & GAAINS
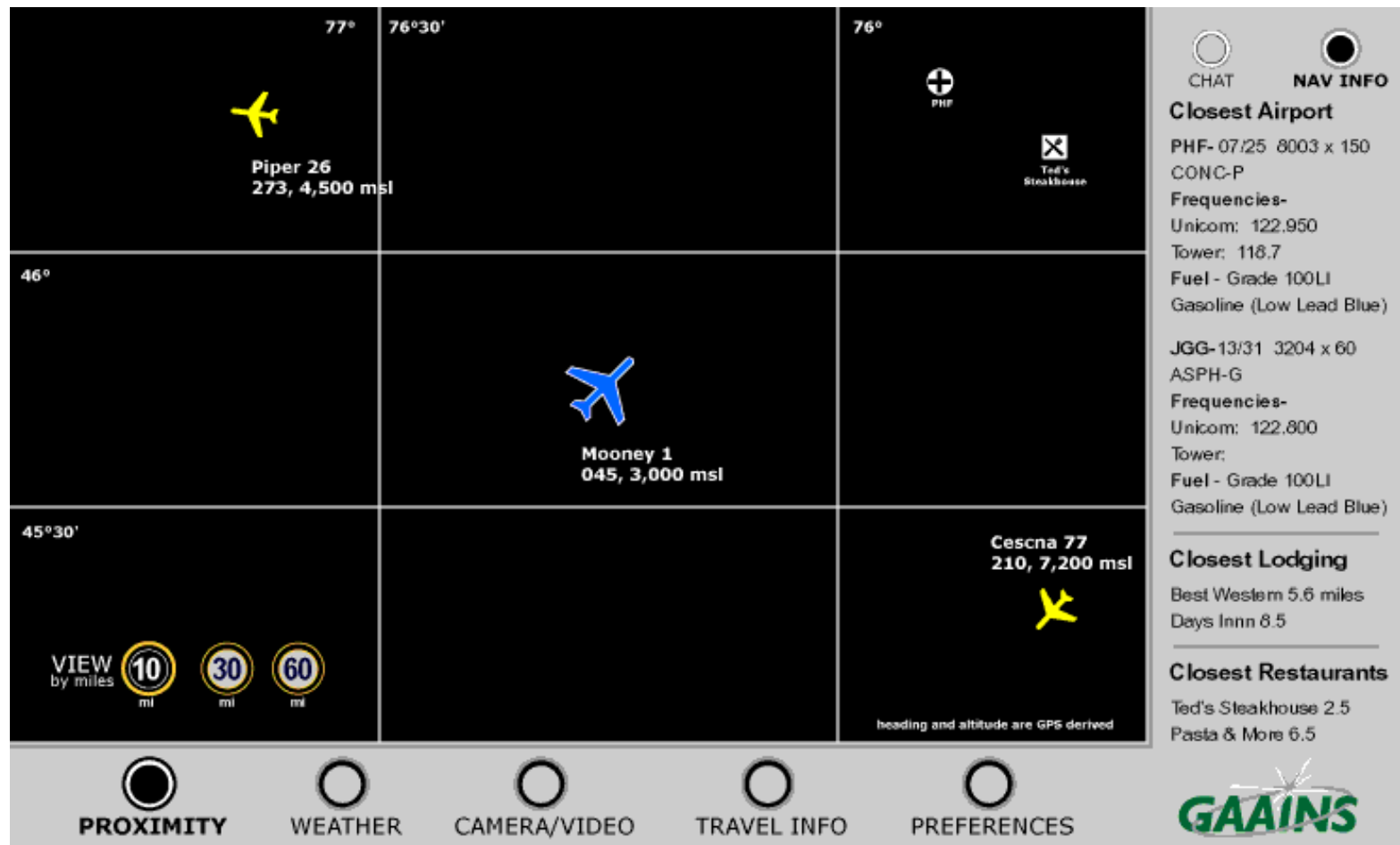
SATS-Net & GAAINS

Diagram 2

Button highlighted to indicate Airport Info is being displayed. User can touch screen to select SATS-Nets web page for PHF's Frequencies, Weather and Approach Plates.

Navigational Info has been selected. Using the planes GPS position, the side bar displays the closest airport, and any user defined travel info.

GAAINS Airborne SATS-Net

Diagram 3
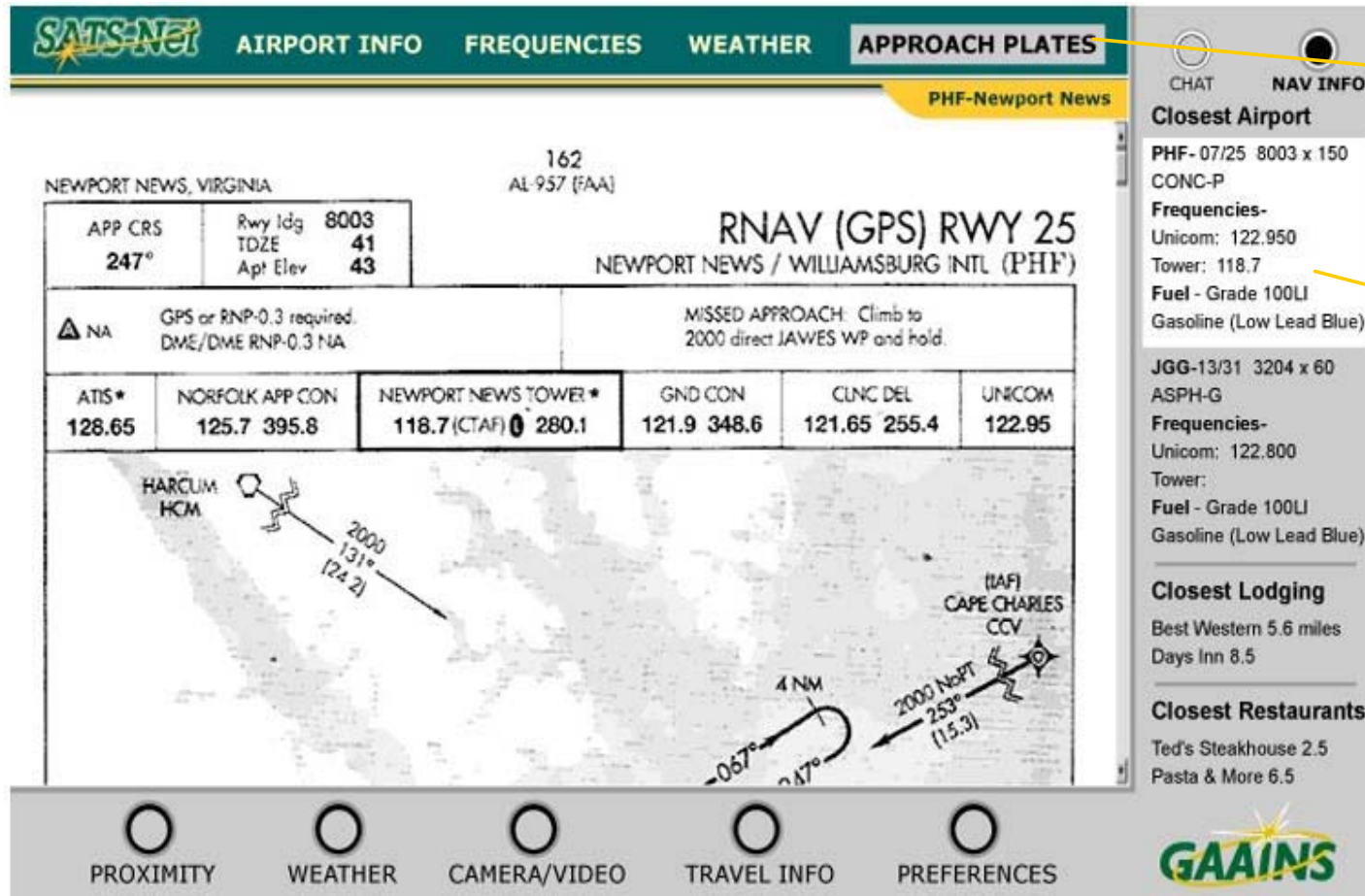
User selected to view PHF's approach plate.

This highlighted box shows the user selected to view detailed info about PHF airport.

GAAINS Future Goals

- Develop advanced "BLACK BOX" real time streaming safety applications

- Development of predictive analysis module.

- Integration with engine monitoring systems to stream engine data

- Integration with onboard bus to stream A/C configuration data

- Stream live onboard images

- Develop user interfaces:
  - Large area PDA's
  - Existing displays
  - Voice Recognition

- Integration of High Speed Bus Technologies & Telematics
  - BlueTooth, CanBus, 802.11b, etc.

- Investigate Security (SAFE-SATS)

Company Contacts

Edwin G. Tirona, CEO
etirona@dynamicsystems.com

Lang Nguyen, Business Analyst
lnguyen@dynamicsystems.com

Gregg Schneider, CTO
gschneider@dynamicsystems.com

Chris Wang, Sales Director
cwang@dynamicsystems.com

www.dynamicsystems.com